New Taxa and Nomenclatural Notes on the Flora of the Marojejy Massif, Madagascar—I. Capparaceae: A New Species of *Crateva*

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ABSTRACT. A new species of *Crateva* L. is described from the Marojejy Massif in northeast Madagascar. It differs from previously described species in having simple obovate leaves with a rounded apex. The species is deciduous and flowers soon after the leaves emerge, indicating that it is a member of section *Siccoruba* Jacobs.

The Marojejy Massif is an isolated upland area in northeastern Madagascar in the province of Antsiranana. Located between Andapa, to the west, and Sambava, to the east, the massif rises out of undulating lowlands to a vast upland area mostly above 800 m to its highest point at 2137 m, Marojejy Est. It is bounded by the valleys of the Androranga River on the north and the Lokoho River on the south. Marojejy is the easternmost of the satellite upland regions that surround Tsaratanana, which lies approximately 100 km to the northwest and at 2876 m is the center of the northern highlands. The upland areas that occur in closest proximity to Marojejy include Betsomanga (ca. 1250 m) ca. 25 km to the north, Andramanalana (2260 m) 40 km to the west, and Forêt D'Anjanaharibe (ca. 1850 m) ca. 40 km to the southwest. A large number of endemic taxa have been reported from Marojejy (Humbert, 1955), but it is unclear what percentage of these also occur on the scattered peaks between Marojejy and Tsaratanana, as most remain very poorly explored.

The central portion of the massif and some of the surrounding lowland areas comprise a 50,000-ha protected area, the Réserve Intégrale No. 12, which was established 31 December 1927. The massif consists mostly of uplifted gneiss, and the topography is extremely rugged with numerous peaks in the reserve above 1500 m. Marojejy and the Forêt d'Anjanaharibe comprise most of the watershed for the Andapa region, one of Madagascar's most important rice-producing areas. Prevailing winds come from the southeast, and the northern portion of the reserve is somewhat drier than the southern and eastern flanks of the massif.

The lowland portions of the reserve consist of a mosaic of evergreen tropical forest, with a canopy 30–60 m tall and secondary growth in areas of cyclone disturbance dominated by *Afromomum angustifolium* K. Schumann and several species of bamboo. The steep slopes of the central massif between 500 and 1000 m are also mostly forested, except for exposed areas of gneiss and the most extreme slopes. Above 1000 m, a variety of vegetation types occur, depending on slope, exposure, and depth of soil. More sheltered valleys are covered with wet, medium-height forest (the *sylve à lichens* of Humbert, 1955), whereas wind-swept ridges below about 1700 m have a dense cover of shrubs and occasional trees to 5 m. The uppermost reaches of the numerous peaks have an open, primarily herbaceous vegetation with numerous Cyperaceae, Poaceae, and Orchidaceae and scattered patches of shrubs up to about a meter tall primarily composed of Rubiaceae, Ericaceae, and *Symphonia microphylla* (Cambessèdes) Bentham & Hooker ex Vesque (Clusiaceae).

Henri Humbert collected intensively in the area from 1948 to 1950, discovering many new taxa and clearly demonstrating that the massif is a center of endemism within northeastern Madagascar (Humbert, 1955). However, Humbert's published accounts of his collecting were not comprehensive, and the author began a new effort to inventory the region thoroughly with four collecting trips in 1988 and 1989. Since that time intensive collecting has continued, and the results will be summarized in a checklist of the Marojejy Massif (Miller, Rakotomalaza, Raharilala, and Rakotondrainibe, in prep.). These recent efforts have yielded many new discoveries that will be named in this series, although a species of *Ardisia* Swartz (Myrsinaceae) has been previously published based on these collections (Miller & Pipoly, 1993).

The genus *Crateva* L. (see Gómez, 1953, for notes on the correct orthography of the generic name) consists of eight species widely distributed in the tropics (Jacobs, 1964), with three reported from Madagascar. Although Hadj Moustapha (1965) recognized four species, Jacobs (1964) pointed out that *Crateva humblotii* (Baillon) Hadj-Moustapha was a confused name probably based on *Capparis humblottii* Baillon and specimens referable to *C. excelsa* Bojer and *C. obov-*

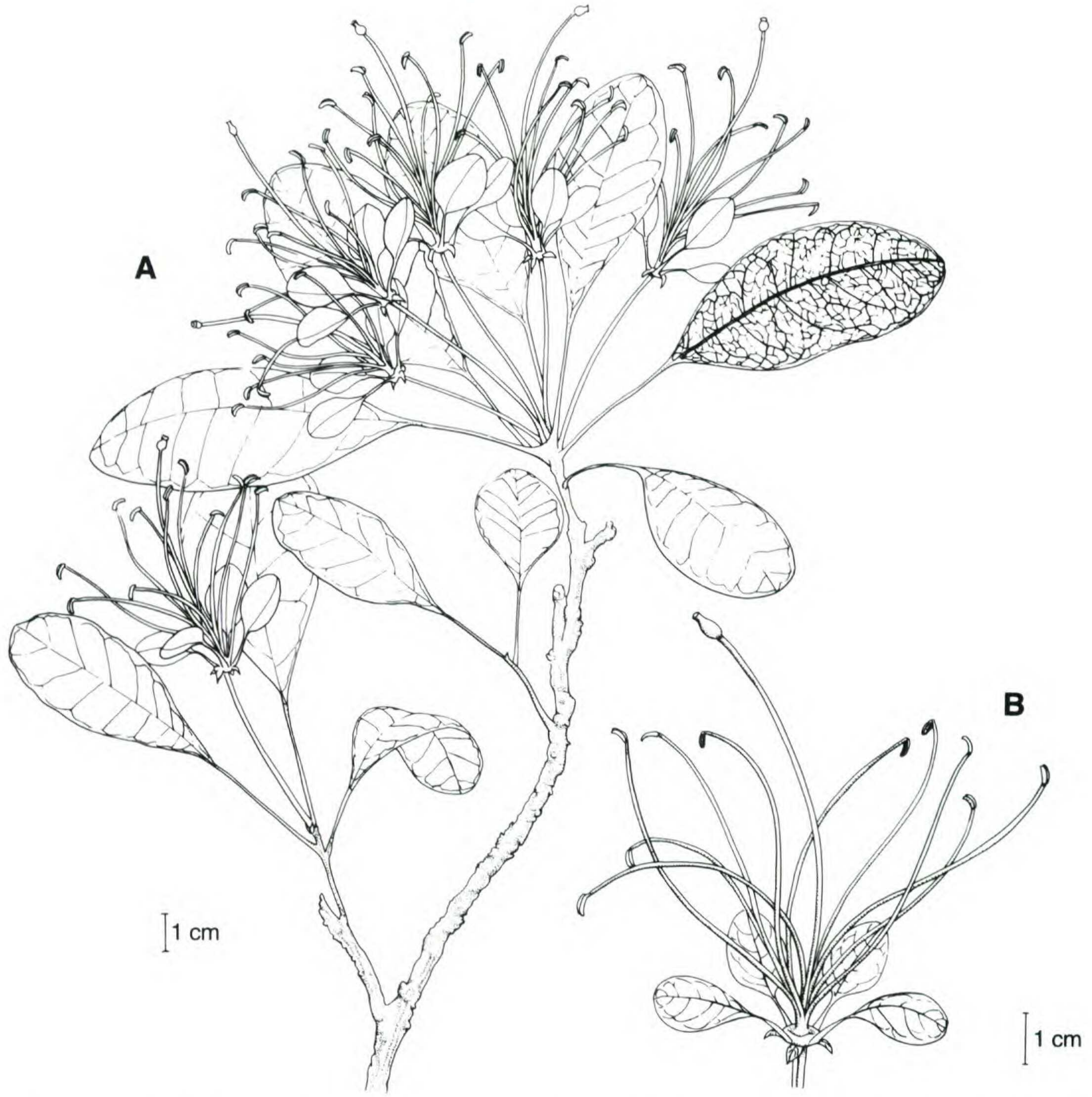

Figure 1. *Crateva simplicifolia* J. S. Miller.—A. Flowering branch with emerging leaves.—B. Flower. (Both from *Rasoavimbahoaka 381*, MO.)

ata Vahl. *Crateva simplicifolia* is known only from the type collection and is the only species of *Crateva* that lacks compound leaves. The one known collection indicates that flowers are produced as the new leaves emerge, which would place it in *Crateva* sect. *Siccoruba* Jacobs, along with the other Malagasy species. It is possible that leaves of the type collection are not fully expanded.

Crateva simplicifolia J. S. Miller, sp. nov. TYPE: Madagascar. Antsiranana: Sambava, Andrahanjo, Antongodriha, Réserve Naturelle Intégrale de Marojejy, aux environs de la rivière Antsahatsimidy, 720–800 m, 14°20′S, 49°43′E, *F. Rasoavimbahoaka 381* (holotype, MO 5056508; isotypes, K, P, TAN, US, WIS). Figure 1.

Frutex ad 6 m altus; a congeneris foliis simplicibus differt.

Shrub to 6 m tall, the twigs glabrous, unevenly ridged lengthwise, the ridges becoming somewhat corky. Leaves deciduous, unifoliolate; blades membranous, narrowly obovate, 3.7–10.2 cm long, 2–4.7 cm wide, the apex rounded to obtuse, the base acute to cuneate, attenuate to the petiole without any pulvinus or petiolule, the margin entire, both surfaces glabrous, the venation brochidodromous, the midrib distinct, more so beneath, the secondary veins 4–7; petioles 2.4–5 cm long, slender, glabrous. Flowers borne on ca. 2-cm-long peduncles of the current season's growth in terminal clusters of 2–7 intermixed with 2–3 leaves, the pedicels

Table 1. A comparison of the morphological features of *Crateva simplicifolia* and *C. obovata*.

	C. simplicifolia	*C. obovata*
Leaves	simple	3–foliolate
Lamina length	3.7–10.2 cm	4–7 cm
Lamina width	2–4.7 cm	2–3.5 cm
Petiole length	2.4–5 cm	1.2–4.2(–8) cm
Inflorescences	2–7-flowered	24–36-flowered
Receptacle width	5–7 mm	3–4.5 mm
Petal length	18–23 mm	12–19 mm
Petal width	9–14 mm	7–11 mm
Claw length	7–11 mm	4–8 mm

4.4–6.5 cm long, glabrous; floral receptacle bowl-shaped with a swollen upper rim, 5–7 mm wide, with sepals and petals arising from the exterior surface; sepals 4, lanceolate, 3–5 mm long, ca. 1 mm wide, glabrous; petals 4, red, drying with a reddish tint, slightly unequal in length, the lamina elliptic, 18–23 mm long, 9–14 mm wide, the apex rounded, the base cuneate, attenuate to the 7–11-mm-long slender claw; stamens 8–11, connate at the base into a column ca. 2 mm long, the filaments 4.5–8.5 cm long, the anthers curved, 2.5–3 mm long; gynophore 4.8–8.2 cm long, the ovary ellipsoid, 1.5–2 mm long, 1–1.2 mm wide, topped by a capitate stigma. Fruit unknown.

Crateva simplicifolia is distinct in its simple leaves, the largest of which exceed measurements reported by Jacobs (1964) for *C. obovata*, the only other species with a rounded leaf apex and the one with which it is most likely to be confused. It differs further in having flower parts larger than those of *C. obovata* and many fewer flowers per inflorescence (Table 1). Jacobs (1964) also reported that the inflorescence of *C. obovata* was truly terminal and did not continue elongating later, and the presence of occasional leaves in the inflorescences of *C. simplicifolia* may indicate that its branches do elongate through the inflorescence and continue growing after flowering.

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